



RDMS DocID

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DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: Cummings Beverly Center (Former USM Machinery Division North Parcel)
Facility Address: 181 Elliot Street
Beverly, MA 01915
Facility EPA ID #: MAD 043415991

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?
- X If yes - check here and continue with #2 below.
- If no - re-evaluate existing data, or
- if data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains **ONLY** to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database **ONLY** as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

RCRA RECORDS CENTER
FACILITY Cummings Centre
I.D. NO. MAD043415991
FILE LOC. R-13
OTHER 108416

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2. Is **groundwater** known or reasonably suspected to be "**contaminated**"¹ above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_____ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

 X If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): See Attached Sheets

Footnotes:

¹"Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

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Question #2 – Rationale and References

The Cummings Beverly Center (Former USM Machinery Division North Parcel) is a subset of the entire property that was the Former USM Machinery Division. There is also a South Parcel of the Former USM Machinery Division which is located on the south side of Elliot Street (Route 62). Environmental response actions at the Former USM Machinery Division property have been performed under the requirements of the Massachusetts Contingency Plan (MCP), 310 CMR 40.0000. The property was reported to the Massachusetts Department of Environmental Protection (MADEP) in 1989. Extensive environmental site characterization occurred at the property from 1987 to 1990 with samples collected throughout the property primarily relating to soil and groundwater, but samples of surface water and sediment at the Upper and Lower Shoe Ponds (located on the property) were also taken. Samples were analyzed for total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs) and metals. Sampling strategies and results are documented in "Phase II – Comprehensive Site Assessment, United Shoe Machinery Facility, Beverly, Massachusetts" by Haley & Aldrich, Inc., June 1991. As described in the Phase II report, soil samples from across the facility contained detectable levels of metals, VOCs, SVOCs, and TPH. PCBs were detected in only a limited number of soil samples and typically at concentrations less than 1 ppm. The majority of groundwater samples from across that site did not contain VOCs, PCBs, or SVOCs, but did typically contain some metals and TPH at low concentrations.

The Phase II report references a separate human health risk characterization report ("Phase II Risk Characterization for the USM Site" by Cambridge Environmental Inc., June 1991). Results of the risk characterization indicated that, for most of the USM facility, risk estimates were below the MCP risk criteria. The risk characterization was performed using an unrestricted use scenario (i.e., residential use). SVOCs in soil were the primary contaminants contributing to the risk. Groundwater risk was not quantified at that time as the groundwater concentrations were compared to drinking water standards, which were not considered to be applicable as the site was not located in a drinking water aquifer.

A Phase III Final Remedy Response Plan was completed in August 1992 by Haley & Aldrich. As future property development plans were for commercial use and did not include residential use, the Phase III report developed a remedial plan based on a restricted commercial use scenario. Under this scenario, soil remediation by excavation and on-site cold-mix batching was selected as the remedial alternative. No groundwater remediation was included in the remedial plan as the groundwater was not used for drinking water purposes.

In April 1996, an Activity and Use Limitation (AUL) was placed on the entire Northern Parcel property to prohibit future residential site use and limit site use to commercial and industrial uses. As part of the AUL, use of the on-site ponds was restricted prohibiting recreational uses, such as boating, swimming, and fishing.

Soil remediation occurred from October 1996 to July 1997 and is documented in the report "Phase IV

Final Inspection Report" by Haley & Aldrich, October 1997. No groundwater remediation was necessary as existing groundwater well concentrations were in compliance with the existing MCP standards for non-drinking water (Method 1 GW-2 and GW-3 standards). This conclusion was based on the original 1988 Phase II sampling as well as additional groundwater sampling and analysis performed in 1995. The 1995 groundwater sampling event confirmed that groundwater quality had not significantly changed since the Phase II and that site contaminants were relatively immobile and generally limited to soil.

Oil non-aqueous phase liquid (NAPL) was encountered during the soil excavation of the area known as the former Chip Grind Shed. The NAPL source was believed to have been from oil in abandoned utility lines from the adjacent Powerhouse (now known as Building 900). Groundwater samples collected subsequent to the NAPL removal and soil excavation did not detect the presence of NAPL in any monitoring well or dissolved concentrations above MCP standards.

After the completion of the remediation documented in the Phase IV report, the North Parcel property was closed with a Response Action Outcome (RAO) Statement (Haley & Aldrich, October 1997) in accordance with the MCP. The RAO documented that a condition of no significant risk to human health existed at the site as long as the site use remained restricted in accordance with the AUL, which it has through the date of this audit.

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3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"² as defined by the monitoring locations designated at the time of this determination)?

_____ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"².

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"²) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and

Reference(s): _____

Footnotes:

² "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

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4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

_____ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and

Reference(s):

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5. Is the **discharge** of “contaminated” groundwater into surface water likely to be “**insignificant**” (i.e., the maximum concentration³ of each contaminant discharging into surface water is less than 10 times their appropriate groundwater “level,” and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter “YE” status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration³ of key contaminants discharged above their groundwater “level,” the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of “contaminated” groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration³ of each contaminant discharged above its groundwater Alevel, the value of the appropriate “level(s),” and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations³ greater than 100 times their appropriate groundwater “levels,” the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter “IN” status code in #8.

Rationale and

Reference(s): _____

Footnotes:

³ As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

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6. Can the **discharge** of “contaminated” groundwater into surface water be shown to be “**currently acceptable**” (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented⁴)?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,⁵ appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment Alevels,@ as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of “contaminated” groundwater can not be shown to be “**currently acceptable**”) - skip to #8 and enter “NO” status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter “IN” status code.

Rationale and

Reference(s): _____

Footnotes:

⁴ Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

⁵ The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

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7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_____ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

_____ If no - enter "NO" status code in #8.

_____ If unknown - enter "IN" status code in #8.

Rationale and
Reference(s):

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8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

 X YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Cummings Beverly Center (Former USM Machinery Division North Parcel) facility, EPA ID # MAD 043415991, located at 181 Elliot Street, Beverly, MA. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

 NO - Unacceptable migration of contaminated groundwater is observed or expected.

 IN - More information is needed to make a determination.

Completed by	<u>BAH</u> Bruce A. Hoskins, P.E., LSP Senior Project Manager Kleinfelder	Date	<u>6/23/10</u>
Reviewed by	<u>CJZ</u> Craig J. Ziady General Counsel Cummings Properties, LLC	Date	<u>6/24/10</u>

Locations where References may be found:

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